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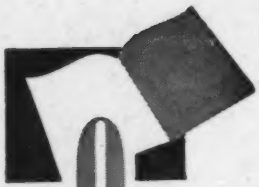

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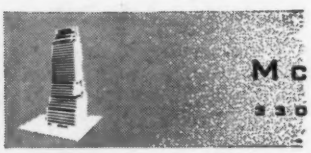

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VOLUME XLIX OCTOBER, 1950 NUMBER 7

CHICAGO'S COAL: ITS ORIGIN, MOVEMENT TO MARKET, AND USE[1]

ARTHUR H. DOERR
Northwestern University

The origin of the Chicago coal supply, movement of coal to market, and the use to which it is put upon arrival presents a very complex and interesting problem. This paper attempts to analyze in a general way the various geographic implications related to the acquisition and transport of coal to Chicago and the use to which the coal is put upon arrival.

The Chicago area as delimited in this paper includes: in addition to the city Chicago, Elmhurst, Blue Island, Calumet City, Whiting, Indiana Harbor, and other suburban cities and towns of Indiana and Illinois (Fig. 1).[2] This area with its more than 4,000,000 inhabitants and multiplicity of industrial and commercial establishments is probably the largest urban coal market in the world.

The more than 25,000,000 tons of coal consumed annually in the Chicago area is produced in several places, and moves to market over a myriad number of routes by several different types of carrier.[3] This vast quantity of coal is used for a multitude of purposes upon its arrival at destination.

[1] Field work which included reconnaissance and interviewing was done in the Spring of 1949. This paper is a revision of a seminar paper written under the direction of Dr. Malcolm Proudfoot at Northwestern University in the Spring of 1949.

[2] The Chicago Switching District was chosen as the study area because it is the only unit relating to the Chicago area for which accurate statistics are available.

[3] Tonnage figures based on average figures for 1944 to 1946 from Columbus R. Gentile and Joseph J. Gallagher, *Bituminous Coal Distribution by Market Areas, Calendar Year 1944, Year Ended Sept. 30, 1945, and Coal Year 1945-46,* Mineral Market Report, M.M.S. No. 1500, Mineral Industry Surveys, U. S. Dept. of the Interior, Bureau of Mines, March, 1947, pp. 17, 77, and 139.

ORIGIN OF THE COAL SUPPLY

All of the coal used in this area is produced east of the Mississippi River. Only the Appalachian and the Eastern Interior coal fields supply coal to Chicago (Fig. 2). The following states send coal to Chicago: Illinois, Kentucky, Indiana, Ohio, West Virginia, Virginia, and Pennsylvania. Of these, Illinois supplies between 25 and 30 per cent of the total amount, West Virginia is second with about 20 per cent of the total, and Kentucky is in third place with from 15 to 20 per cent of the total. It is striking to note that the great coal producing state of Pennsylvania supplies less than 1 per cent of the coal shipped to the Chicago area. (For tonnage flow see Fig. 3.)

FIG. 1. The Chicago area.

All but a minute amount of the coal consumed is of the bituminous variety, but a small amount of anthracite moves in from eastern Pennsylvania.

Several factors have influenced the present orientation of the Chicago coal market. The large amounts of Illinois coals that are used reflect the cheapness of coal produced in the Eastern Interior Field as opposed to the greater expense involved in obtaining coals from the Appalachian field. The medium to low rank coal obtained from Illinois, Indiana, and western Kentucky is satisfactory for steam generation and most other industrial purposes. It is not satisfactory for metallurgical coke, however, when used alone, and this is, in part, the reason for the large importation of high rank Appalachian coals.

West Virginia and eastern Kentucky supply most of the coking coal. In addition, large amounts of high rank coal go into domestic

channels because of its higher quality which results in lower ash content, higher heating capacity per unit of weight, and semi-smokeless qualities.

As has been mentioned, Pennsylvania coal is practically eliminated from the Chicago market. Several factors enter into this rather peculiar absence of Pennsylvania coals from this area. One very important factor is the length of time which Pennsylvania has been producing coal. As a result most of the Pennsylvania markets were well established before Chicago became an important market for coal. In addition, the large industries located within, and adjacent to, Pennsylvania consume tremendous amounts of coal, and reduce the amount of coal which would otherwise be available for other markets such as Chicago. On the other hand, West Virginia and eastern Kentucky were able to break into the Chicago market because of industry's demand for a high grade coking coal and consumer demand for better domestic coal. The late start of these areas as mining centers naturally helped channel their business away from eastern markets, which were largely under the control of the Pennsylvania mining districts.

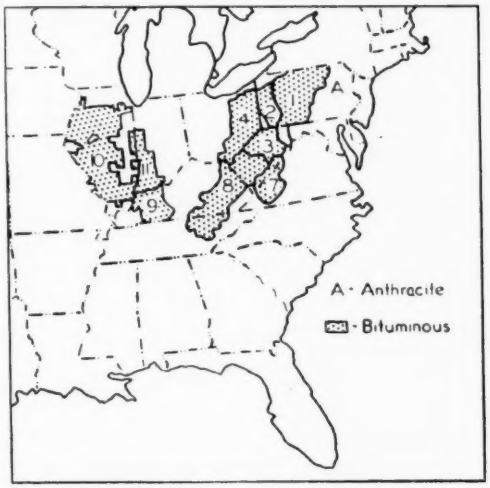

Fig. 2. Source of Chicago's coal. Numbered districts as set forth by Bituminous Coal Act of 1939.

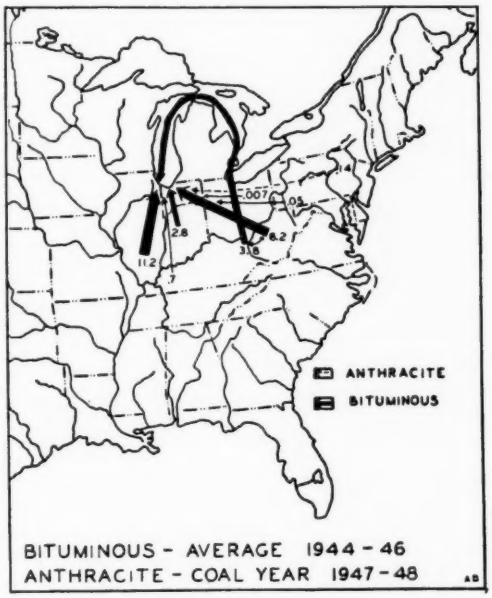

Fig. 3. Movement of coal to Chicago in millions of tons.

MOVEMENT OF COAL TO MARKET

Chicago is advantageously situated to receive coal from all its supplying centers. The transportation of 25,000,000 tons of coal to the Chicago area each year is a stupendous task. Chicago, the largest railroad center in the United States, has the added advantage of being located on Lake Michigan and being connected to the Inland Waterways system. Present transport facilities are generally excellent and many proposed improvement schemes introduce the possibility of even better transportation facilities. Since coal is a bulky, low value product, this good transportation network is favorable for supplying the Chicago coal market.

Altho water transportation is important in the movement of coal to the Chicago market, far more coal moves to Chicago by rail transport than by water and trucking combined.

Most of the coal which is obtained from the Eastern Interior Field (Illinois, Indiana, and western Kentucky) moves to market by rail. Two factors have influenced the dependence upon rail carriers in this area; they are: the relatively short distances which are involved, and the lack of a superior waterway system. Recently, however, there has been an increased use of the Illinois River Waterway and its canal connection with Chicago. The tonnage carried on the Illinois Waterway has increased from slightly less than 2,000,000 tons in 1940 to almost 4,000,000 tons in 1947.[4] If increased widening and deepening projects are carried thru, it seems probable that an increased use will be made of this waterway.

Coals produced in the Appalachian Field are in an area where water transport and rail transport are in more direct competition. Of the coal which is shipped from eastern Kentucky, West Virginia, and Virginia, Chicago seems to be on or near the competitive boundary between coals shipped by an all rail haul, and those which are shipped by a combination rail-lake haul.

All of the coal shipped from the Appalachian Field is of high grade and is used for coke and by-products as well as domestic fuel. Most of the coking coal is used in the Lake Calumet industrial district of South Chicago. Most of this coal moves to market via the Great Lakes; only an insignificant amount of coking coal from

[4] Tonnage figures were obtained in the office of the Illinois Coal Operators Association, and were based on United States Corps of Engineers figures. Other figures checked do not agree specifically with these, but all the figures checked indicated the same rising trend from 1940 to 1947.

the Appalachian Field is carried into this area by a rail haul. Obviously it is cheaper to move coking coal over the Great Lakes route than by rail haulage.

In contrast to the 3,500,000 tons of coking coal shipped into the Chicago area by a combination rail-lake haul, less than 50,000 tons of domestic coal moves over the Great Lakes route. The most important reason for the relative lack of domestic coal shipped in this manner is the extreme degradation which the coal undergoes on the lake haul. Transfer from the rail cars to lake steamer at one of the Lake Erie ports, and then into dumps at Chicago results in much breakage of coal. Since it is desirable to maintain domestic coal sizes to improve its saleability and maintain its value, it becomes obvious that the degradation inflicted on the lake route restricts the amount of domestic coal shipped in this way. On the contrary, this degradation has no effect on the coking coal since it is composed primarily of coal screenings.

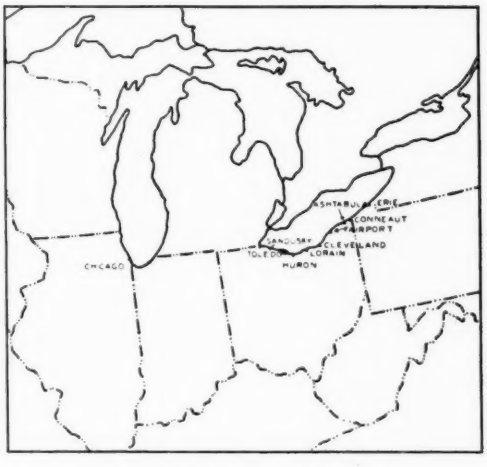

Fig. 4. Ports shipping coal to Chicago.

Another important factor enters into this consideration; most of the retail coal yards are located away from the lake front. This being the case, any coal carried by lake vessel would have to be loaded on truck or train to be carried to one of the outlying retail coal yards. This would, of course, result in additional degradation as well as additional cost.

The most obvious and perhaps the most influential factor, however, is the fact that the peak season for use of domestic coal is during the slack season of Great Lakes transport.

As has been previously mentioned, most of the coal used in the Chicago area comes from Illinois. A brief look at the freight rates will soon explain why.[5] Coals shipped from the Eastern Interior

[5] Walter H. Voskuil, Douglas F. Stevens, and Nina T. Hamrick, *Illinois Mineral Industry in 1945*, Report of Investigations No. 121, Ill. Geol. Sur., Urbana, Ill., 1946, pp. 46-47.

Field (Illinois, Indiana, and western Kentucky) cost from $1.65 to $2.30 per ton to ship by rail. Coals shipped from West Virginia and eastern Kentucky bear a freight charge of from $3.19 to $3.39 per ton. Anthracite shipped from eastern Pennsylvania costs about $4.26 per ton to ship. Thus it can be seen that coal produced in the Eastern Interior Field costs about $1.00 per ton less to ship than the coals from the east. Coals shipped by a combination rail-lake haul cost about fifty cents more on the ton to ship than those shipped by an all rail haul from Illinois, Indiana, and western Kentucky. These lower freight rates coupled with the fact that coals produced in the Eastern Interior Field are usually of lower value than those produced in the Appalachian Field account for the use of coal from the midwest where feasible. It seems safe to assume that almost no coal would be purchased from the Appalachian Field if it did not possess such excellent qualities.

Several carriers share in the distribution of coal which is shipped into Chicago. The most important carriers are railroads. More than 20,000,000 tons of coal are shipped into the Chicago area by rail every year.

The most important railroads moving coal from Illinois, Indiana, and western Kentucky are: Illinois Central; Central and Eastern Illinois; Alton; Atchison, Topeka and Santa Fe, Chicago, Burlington and Quincy; Minneapolis, St. Paul and Pacific; and the Louisville and Nashville. From West Virginia, Virginia, eastern Kentucky, and Ohio most of the coal moves to market on the following railroads: Chesapeake and Ohio; Pennsylvania; New York Central; Baltimore and Ohio; and Norfolk and Western. Most of the coal carried from this area for transfer to lake vessels is carried on the New York Central, and the Baltimore and Ohio. Several lake ports such as: Erie, Conneaut, Ashtabula, Sandusky, and others then ship their coal to upper lake ports including Chicago.

Trucks deliver an insignificant amount of coal to the Chicago area, partially because of animosity they created in damaging roads.[6] Within the city, however, the trucks are important for moving coal from the yard to the consumer.

[6] Information received from Mr. Fred S. Wilkey, Secretary of the Illinois Coal Operator Association.

Uses of Coal in the Chicago Area

Coal is used for a wide variety of purposes in this large commercial and industrial center. About 10,000,000 to 12,000,000 tons of coal are used for industrial purposes annually in the Chicago area. Of the heavy users of coal public utilities, iron and steel, and cement manufacturing account for a large share.

Commonwealth Edison with its subsidiary companies consumed more than 9,000,000 tons of coal in 1948, which indicates the tremendous amount of coal used by public utility companies.

By-product coal for use in the manufacture of coke and water gas amounts to about 6,000,000 tons. Of this amount the Inland Steel Company alone uses almost 3,000,000 tons per year. It is also quite possible that some of the coal which is tagged as industrial coal is eventually coked.

About 9,000,000 tons of coal are distributed annually to the various retail coal dealers for supplying the various domestic and commercial needs.

Small amounts of bituminous coal are used for smithing and forging. Minor amounts of coal are stored or consigned for shipment to other areas.

Of the some 150,000 tons of anthracite coal shipped into the Chicago area by rail almost two-thirds of it was used for domestic purposes and the remaining one-third for steam power.

Future

Several factors might feasibly influence the supply of coal to the Chicago area within the next few years. One of the things which seems likely to significantly change the coal supply picture is the probability that larger amounts of lower rank coal from the Eastern Interior Field will be used in the manufacture of coke. Several factors have led to this situation.

> The best of our coking coals are approaching depletion. In response to the demand for smokeless coals, the domestic heating market as well as coke manufacture is contributing to the exhaustion of low volatile coals, and the natural tendency to use the best first has resulted in the exploitation of the low sulfur high volatile coals by the coke industry.[1]

[1] Frank H. Reed, G. R. Yohe, O. W. Rees, and Harold W. Jackman, *Trends in Coal Utilization,* Circular No. 128, Urbana, Illinois, 1947. p. 15.

This very fact has resulted in the experimentation with lower rank coal such as that produced in the Eastern Interior Field for use as metallurgical coke. There has been some measure of success attendant with these experimentations; in fact, at the present time coals from the Eastern Interior Field are being used in amounts ranging from 10 per cent to 30 per cent of the total amount of coke produced in the Chicago area. With increasing amounts of coal being used from the Eastern Interior Field, it seems quite likely that the Appalachian producers will have to seek new markets to compensate for such potential market losses.

Several other factors could feasibly influence the future orientation of the Chicago coal market. Among the more important of these is the possible improvement of waterways, such as the proposed St. Lawrence Waterway, the improvement of the Calumet Sag Channel, and the possible improvement of the Chicago River. A possible shift in orientation of the steel industry would greatly alter the coal supply picture of Chicago. Shifts to other fuels are, and will continue, to influence the coal market of Chicago. The possible new development of conveyor belts for carrying coal from the Appalachian Field to the shores of the Great Lakes might conceivably increase the amount of eastern coals which are purchased. Obviously the future cannot be accurately foretold because there are too many unknown quantities. Possibly, too, man's choice will counterbalance all the physical and economic considerations. It does seem highly probable, however, that the above mentioned factors will significantly influence any possible change in orientation of the Chicago coal market.

Summary

The Chicago Area, which is the largest urban coal market in the world, obtains all its coal from either the Eastern Interior Coal Field or the Appalachian Field. Where possible, at the present time, coal is purchased from Illinois, Indiana, and western Kentucky, because of the cheapness of this fuel compared to that produced in the Appalachian Field. High quality coal from the east for use as coking coal and high grade domestic fuel gives West Virginia, eastern Kentucky, Ohio, and Virginia a considerable share of the Chicago coal market.

Railroads haul the overwhelming majority of the coal moving into Chicago, altho waterways (including both the Great Lakes Waterway and the Inland Waterway System) carry about 25 per cent of the 25,000,000 to 30,000,000 tons of coal used annually in the Chicago Area. Trucks carry an insignificant amount of coal into Chicago, but along with the Belt Line Railroads, they are important distributors of coal within the city.

Future developments might well change the orientation of the Chicago coal market. Altho these factors cannot be examined quantitatively, there seems to be a distinct trend towards the using of more coal from nearby locations and less from greater distances. Whether this trend continues depends in large part on technological developments, labor relations, the buyers of coal, and the people of Chicago themselves.

A MEXICAN PUEBLO IN TRANSITION[1]

RUTH HOFFMAN STANLEY
George Peabody College for Teachers

Mexico's agrarian reforms since the Revolution of 1910 have focused on the ejido program, that is, the breaking up of large estates and the redistribution of land to landless farmers. From 1911 to 1920, very little real headway was made toward accomplishing the objective. Following the election of Obregon, however, there was a marked increase in the amount of land restored to pueblos. Aided by new legislation in the thirties, the program of restoration continued to the extent that, by 1946, approximately one-fourth of Mexico's agricultural land, representing one-half of the crop land, was in the hands of recipients of land grants.[2]

The term ejido includes both the agrarian community which has received land and the land received in grant. Recipients of

[1] This article was written as a result of a summer's research in Mexico, made possible in part through a grant-in-aid allocated by a research committee of the Vanderbilt-Scarritt-Peabody University Center, from funds made available jointly by the Carnegie Foundation and the three colleges.

[2] Ana M. Gomez, "Mexican Agrarian Policy—Postwar Developments," *Foreign Agriculture*, Vol. XII, No. 10, Oct. 1948, 221.

plots, or parcels, of land are referred to as ejidatarios. These terms will be used repeatedly in this paper as there are no corresponding terms in English.

There are three grades of ejidos in Mexico, the rich, the poor, and the middle group. The rich ejidos are generally those on irrigated land, in which emphasis is placed on commercial crops. They are exemplified by the cotton producing areas of the dryer northern states. The poor ejidos, typical of those in the Valley of Mexico, are a result of too many people on too little land, much of which is relatively unproductive. Subsistence farming based on corn and frijoles on plots ranging in size from less than two acres to ten acres of land is the general rule. Many farmers in these ejidos are forced to work in factories or other enterprises in the city to supplement their meager income from the land. In the middle group of ejidos, more intensive commercial production, made possible thru better land or irrigation farming and better communication facilities, has resulted in a slightly higher level of living.

A poor ejido in the Valley of Mexico, suggested as typical by an official of the National Bank of Ejidal Credit, was studied in the field by the author during the summer of 1948 to see what changes, if any, had taken place within the villages as a result of the ejido program. San Pablo Atlazalpan in the Municipio of Chalco, State of Mexico, approximately twenty miles east and south of Mexico, D. F., was chosen for the study. This pueblo was built in the colonial period to house laborers on the Hacienda de la Asuncion. Following the Revolution and subsequent partition of the land the hacienda was reduced to 86 acres, now used for corn and dairy cattle. San Pablo is only one of several pueblos of the Chalco Zone that were formerly a part of the larger estate.

THE VILLAGE AND ITS SETTING

The village and surrounding cropland are located on the lacustrine plain of former Lake Chalco, an area of relatively fertile sandy loam soils. Low mountains rise abruptly from the plain and here and there, volcanic cinder cones break the monotony of the low relief. Trees on the mountain slopes have long been destroyed. Scrubby brushland and grasses on the lower slopes are used by the villagers for summer pasture and as a source of fuel.

San Pablo is laid out in a rectangular pattern of low, flat-roofed buildings behind contiguous adobe walls, and narrow mud roads.

During the summer rainy season mudholes are common in the streets. For a village of more than two thousand, the streets are startlingly empty. Intimate home life is now, as it has always been, well hidden from the casual observer. Wooden doors of recent construction in centuries-old walls mark the entrance into the inner courts toward which each residence is oriented. The absence of stucco or whitewash indicates the relative poverty of the village.

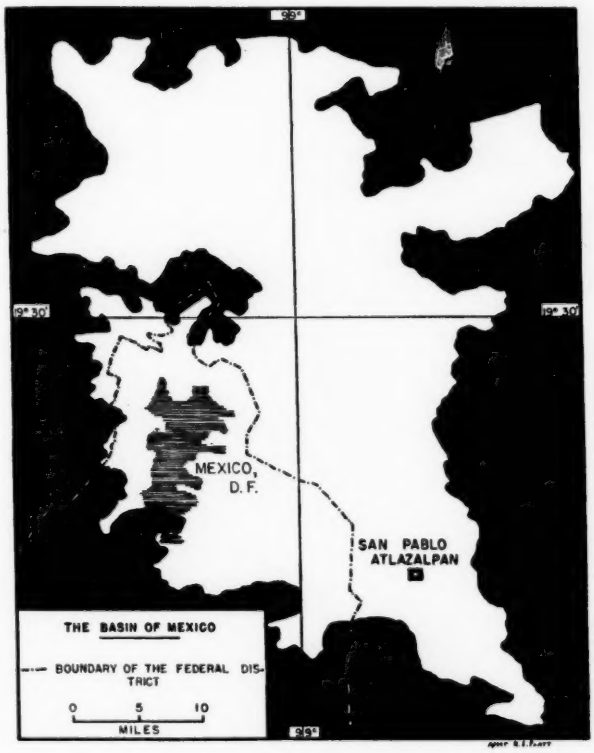

Fig. 1. Basin of Mexico.

As in the past, public life of the village, including school and religious activities, is centered in the plaza or village square. In contrast to the drabness of the village streets, the plaza is colorful. A bandstand of rust and tan tile stands in the center. A lovely churchyard and Catholic church open on the square on the north side, and a newly whitewashed public building faces the plaza on the east side. A number of trees in the square add to its beauty and soften the glare of the noon-day sun. Within the past twenty years a Federal school building, one of two in the village, has been built on the south side of the square. The school buildings and the municipal building have both been built as a result of reforms following the Revolution. Municipal organization and the erecting of schools are not, however, confined to the ejidos.

Economy of the Village

Land Holdings. San Pablo Atlazalpan, a pueblo of 2,700 people, received as ejidal land a total of 988 acres on May 17, 1925. Of the

725 family heads in the village, 440 farmers received ejidal parcels. Of this, approximately 632 acres are cultivated under temporal[3] farming and the rest is classed as cerril.[4]

The village owns land other than the ejidal grant. An additional 904 acres have been bought by various farmers in small plots from surrounding farms. The villagers own 1,729 acres of summer pasture and some 1,235 acres of mountain land not included in the grant. Communal land of the village totals 741 acres. This land added to the ejidal grant gives the village a total holding of approximately 5,597 acres. The average size of individual family holdings is, roughly, six acres.

Bank of Ejidal Credit. Much criticism has been made of the redistribution of the land to ejidatarios. Some people say that the individual Mexican farmer has no initiative, that he cannot make the land as productive on his own as it was under hacienda management, that the program of dividing the land equally among many farmers makes individual holdings too small and does not discriminate between good farmers and poor ones, and that ejidatarios do not have the money to operate land successfully.

In order to aid the farmers in overcoming the handicaps of poor land and small holdings, and to assist the ejidatarios in better management of the land, the Mexican government, in 1936, created the National Bank of Ejidal Credit. The bank operates thru agencies which are divided into zones. San Pablo Atlazalpan is a part of the Chalco Zone. The operating capital of the bank is obtained from three sources: sixty per cent is furnished by the Federal government; thirty per cent by the State government in which the Bank is located; and ten per cent by the ejidatarios themselves.

The Bank operates only thru local ejidal credit societies. In order to form a society and control the ejido, it is necessary to have a membership of fifty per cent plus one person of all the ejidatarios in a village. In San Pablo, 250 of the 440 ejidatarios belong to the local society. Local societies may obtain loans and equipment from the Bank. With the money thus obtained the farmers work the land. In the case of newly established ejidos the farmer, upon receipt of the land, is able to borrow money with which to buy animals (principally mules), implements, and seeds for the first planting.

[3] Dependent on summer rains for moisture without benefit of irrigation.
[4] Rough, mountainous land.

Subsistence money is usually supplied until the first crop is harvested.

Of more lasting significance, probably, than the initial loans is the work of the technical engineers of the Bank. Altho ejidal land is given only to those persons who have lived on the farms and have knowledge of the rudiments of land cultivation, implements and methods are primitive and wasteful of human energy and land resources. The technical engineers, all of whom are graduates of

Fig. 2. Cornfields separated by rows of trees or by dirt roads occupy all of the cropland around the village. The isolated mountain on the lake plain is a volcanic cinder cone. The cumulus clouds, rapidly becoming thunderheads, are typical in the summer. Much soil is lost from these corn fields during the violent showers that occur almost every afternoon in the rainy season.

the National School of Agriculture in Chapingo, State of Mexico, are teaching the farmers how to modify the old systems. The process will take a very long time. Most of the ejidatarios, predominantly Indian in culture, have had little or no education and, as laborers on a hacienda, have developed little initiative. Likewise, they see no reason for change. To a casual observer the thought occurs that many of the farmers regard the engineer as the new voice of authority replacing the hacienda owner rather than as an adviser. The engineers with whom the author worked are thoroly

competent and sympathetic. They recognize these deeply rooted obstacles and patiently work toward overcoming them little by little.

The following paragraphs on San Pablo Atlazalpan will serve to bring more clearly into focus the work of the Engineer of the Chalco Zone.

Method of Cultivation. The first plowing in the spring is done with a tractor owned by the Bank and operated by a driver hired thru the Bank. After the initial plowing continued care of the fields is in the hands of the ejidatarios. The only equipment owned by the ejidatarios is a steel plow pulled by mules or horses. Plowing continues until the corn is several feet high.

Virtually all of the cultivated land is in corn. Other crops are limited in San Pablo to frijoles and haba (varieties of beans). These products, where grown, are intercropped with the corn. Not once was a field devoted entirely to frijoles or haba observed by the author in July, 1948.

Little progress has been made in soil management or conservation education. No rotation is carried on, but compensation for this is made by the practice of planting trebol (a clover) after the last plowing prior to harvest. By the time the corn is ripened the trebol is approximately three feet high. After harvest the trebol is plowed under as green manure. This practice has been carried on for the past two years.

Nothing has actually been accomplished to prevent soil wash from the impact of heavy afternoon rains on newly plowed fields. However, one ejidatario was observed during an exceptionally heavy downpour piling mud across the mouth of a furrow at a corner of the field where a small rushing stream was cutting away the banks of the field. Very slowly, by encouragement of such practices, the engineers are teaching the farmers something of the urgency of caring for the land. But the imprint of centuries of farming in a traditional exploitive system fades very slowly.

The use of improved seed is taught by the engineer. Formerly it was customary to sell the best seed and plant that of poor quality. All of the teaching is informal by way of suggestions here and there in a friendly manner. In San Pablo, and the Chalco Zone in general, a feeling of friendliness and good fellowship prevails between the engineer and the leading ejidatarios.

Disposal of the Harvest. The percentage of maize grown for the market varies greatly from village to village. In most of the pueblos

of the Chalco Zone the farmers produce enough for subsistence but very little surplus to sell. In San Pablo, on the contrary, proximity to good markets in Chalco and in Mexico, D. F. results in the selling of sixty per cent of its maize crop. The maize is carried to market in the two trucks owned by the ejidatarios, and on burros. With the money received cheap clothes and other meager supplies are purchased.

Relative Importance of Livestock. In this pueblo of 2,700 people, comprising 725 families, there are 100 cattle, 260 goats, 200 sheep,

Fig. 3. A typical street scene in San Pablo Atlazalpan. Evidence of the poverty of the village is seen in the state of disrepair of the walls and the lack of stucco or whitewash.

2,000 pigs, 150 mules, 50 horses, and 4,500 turkeys, chickens, and ducks. With an average of one cow for every seven families, it is obvious that dairy products are insignificant in the daily diet. Milk is fed to children when they are ill. The poor quality of the cerril for pasture lands is possibly responsible in part for the small numbers of cattle. Pasture feed is supplemented by grasses gathered in swampy spots along the road.

The sale of pigs supplements the income from maize sales. A total average of less than three pigs per family indicates, however, that the additional income is slight. No provision is made in the village for scientific care of pigs. Every family raises some poultry for the market. Turkeys are particularly numerous in central Mexico.

Diet. The diet of the village people has probably changed very little, with the possible exception of fruits and rice that are

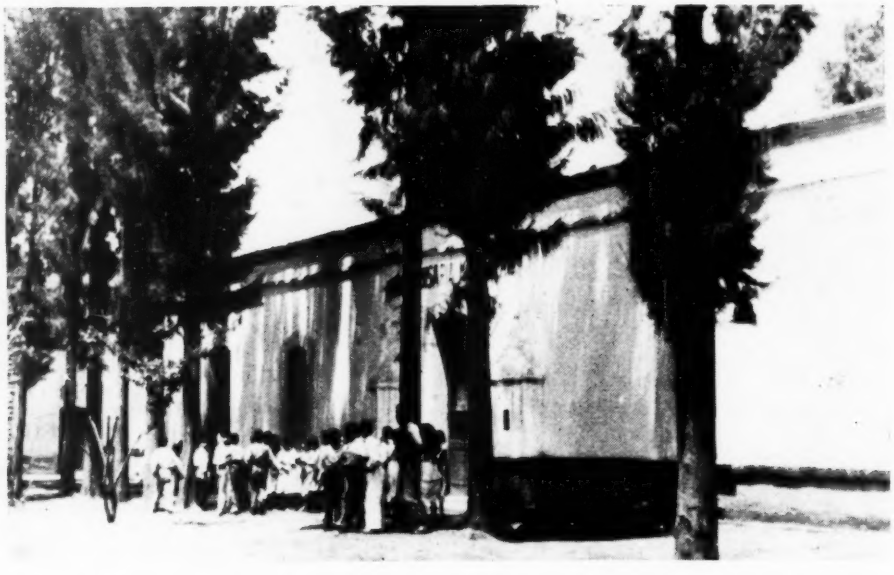

FIG. 4. The Federal school building on the south side of the square is typical of the many schools that have been built by the government since 1925. Room equipment and furnishings are meager in the schools.

available in the markets. The usual daily diet in San Pablo consists of tortillas; soup made of flour, boiled water, and beef or sheep; pork and sauce; vegetables of the area such as purslane, frijoles, and horse beans (haba). Very little chili is eaten. If a family has the money it is possible to buy bananas, rice, oranges, pineapples, sugar, and coffee, sweet corn, and tomatoes. There is no lack of variety in the foods grown in the area, or brought to the market center from other regions. In general, the people of San Pablo have sufficient food to eat altho the very low income and traditional taste precludes much purchasing of supplementary foods.

Fig. 5. All of the roads between pueblos in the Chalco Zone are dirt roads, and generally passable for cars. The mountain slope in the background is classed as cerril. Because it is poor pasture, animals are also grazed on grass along the roads.

Summary

Prior to the redistribution of land the holdings of this village, at that time with a population of 1,127, totaled less than 3,000 acres, three-fourths of which was mountainous or summer pasture of poor quality, and the remaining fourth was communal crop land. Today, with its population more than doubled and village holdings of almost 5,600 acres, the average family owns approximately six acres including both cerril and cultivable land. More than fifty per cent of the family heads have received ejidal parcels. Ejidatarios organized a local society of ejidal credit, thereby becoming eligible for financial aid from the Bank of Ejidal Credit for the purchasing of equipment and seeds.

Today the ejidatarios have the benefit of expert technical advice from the trained agricultural engineer placed in charge of the local program. Slowly, thru his guidance, the farmers are acquiring improved methods of cultivation. The first spring plowing is now done with a tractor owned and operated by the Bank of Ejidal Credit and the farmers themselves own two trucks and steel plows. The use of better quality seed corn and the planting of trebol with the corn to provide a post-season green manure have both been introduced. Due to the proximity of the urban markets sixty per cent of the corn crop is sold.

Two schools and five teachers have been provided by the Federal government. Talented boys are given an opportunity to attend the National School of Agriculture.

Although beginnings have been made, the problem is far from a satisfactory solution. Individual land holdings are still too small to support a family on more than a subsistence level; yields are still unnecessarily low; techniques are essentially the same as before the Revolution. Practically no progress has been made in conservation of soil and water resources in the ejido. However, the changes listed are suggestive. Many years must pass before the total success of the program can be evaluated. Perhaps the most encouraging evidence of its ultimate success is the enthusiasm of the technical engineer in the field.

ALASKA AND THE ALASKA HIGHWAY

E. FRANKLIN FISHER
Thomas Carr Howe High School

The improved Alaska Highway, nicknamed the Alcan, has opened the gateway to opportunity for the geography teacher. Why not combine your plans for educational advancement and a wonderful vacation next summer? During the summer I helped deliver a school bus to Alaska.

August 8; just one week and 2,000 miles after leaving Indianapolis, we arrived at the Canadian Border and after clearing Canadian Customs felt that we were really "Alaska Bound."

It was interesting to note that the fields of golden grain were being harvested in Montana as we left the United States. Driving past the fertile fields of Alberta, we found the unripened grain just beginning to turn a golden brown. Calgary is a thriving center of a great wheat producing and cattle raising area. At Edmonton, capital of Alberta, in addition to fertile agricultural lands, we found a district of large oil and coal deposits. Edmonton is also an industrial center with numerous manufacturing concerns.

THE END OF A PERFECT DAY

Travel regulations listed by motor clubs and travel agencies suggest that spare parts for your car should be carried for your convenience. In most instances however, you will find facilities for minor repairs every 200-300 miles along the highway, and gasoline

and oil are usually available every 50-75 miles. If you contemplate a trip up the Alaska Highway, have a steel plate welded around the bottom of your gas tank, to protect it from the rocks and stones. Remember that from Edmonton to Alaska, gasoline will cost from 32 to 66 cents per gallon!

Driving over the 431 miles of excellent black top and concrete

highways between Shelby, Montana and Edmonton, Alberta, will almost convince the traveler that the authors of those travel recommendations were pessimists. Driving conditions had been perfect—and now "to the end of a perfect day." The hard surfaced road ends abruptly as you head north for Athabaska. This rich agricultural land along the tumbling Athabaska River is unsurpassed in scenic beauty.

BRIDGE OUT

To the northwest of Athabaska, near Lesser Slave Lake, it started to rain as we saw a convoy of Canadian Army vehicles approaching us. For miles and miles the only vehicles we met, were those of the convoy.

At 12:10 P.M. on August 9, we lined up in back of several other cars and trucks and were informed that the bridge up the road had been washed away by the turbulent waters of a small stream. Walking down to the bridge, we learned that the crew expected to have the road open again in a day or two! The army convoy had opened a temporary road around the bridge, and of course they had priority on the one-way traffic lane.

About 2 P.M. an enterprising farmer appeared at the scene of the detour with an ancient tractor. As the last of the army vehicles were pulled thru we found that our good neighbor was willing to help us thru the 500-600 foot detour. However, when we found his assistance would cost $35, we decided to wait until the highway department sent aid. At 9:20 P.M., a highway "Cat" tractor hooked on to the front of the bus, and we were pulled safely thru the detour.

ALASKA HIGHWAY

From Edmonton to Dawson Creek, the road is gravel and dirt, with very little gravel where the road runs thru the fertile open prairie. We went thru High Prairie and entered Grande Prairie and were surprised to find a wide concrete pavement thru town. Here is the only paved street between Edmonton and Fairbanks. Near Grande Prairie at the small town of Beaverlodge, six elevators handle around a million bushels of golden grain annually.

The distant mountains become visible in the west as Dawson Creek is approached. In the center of town is Mile Zero on the Alaska Highway. The "ALCAN" at last, just 3,000 miles and 9 days away from Indianapolis.

The Alaska Highway from Mile Zero at Dawson Creek, British Columbia, Canada, to Fairbanks, Alaska, traverses 1,523 miles of the most scenic route imaginable. Its 1,221 miles in Canada and 302 miles in Alaska have been cut thru a wilderness area, and the road is an amazing feat of engineering skill. The highway was maintained as a military road by United States authorities until April 1, 1946 when it was turned over to Canada.

The country beyond Dawson Creek is heavily timbered, but

much of the land is flat. Cleared land produces fine crops of both wheat and oats. About 300 miles from Dawson Creek the route crosses the northerly extension of the Rocky Mountain Range at an elevation of 4,251 feet. There is some beautiful mountain scenery in this territory.

Alaska

From Whitehorse north, the road follows an old trail passing beautiful 40-mile long Kluane Lake with its superb views. After entering Alaska, we followed the Tanana River, and at Tok Junction decided that we would go to Fairbanks. While in Fairbanks we visited America's northernmost university, the University of Alaska, which is three miles from the city, at College.

Fairbanks is an important gold mining and transportation center. The Alaska Highway and Alaska Railroad terminals are located here, and it is southern terminus for the Richardson Highway which runs south to Valdez. The city is an important air departure point, and daily flights can be made over the Arctic Circle during the summer months.

Matanuska Valley

Retracing part of our route from Fairbanks back to Big Delta, we started down the earliest unit in the Alaskan road system, the Richardson Highway. Then we proceeded over Glenn Highway from Glenn Allen to Palmer. The Palmer road was originally constructed to serve the fabulous Matanuska Valley. Many of the homesteaders sent to this colony from the States in 1935, are now prosperous farmers. Anchorage provides a ready market for the agricultural products of Palmer and Matanuska Valley. Potatoes, cabbage, beets, carrots and peas will soon be transported the 47 miles to Anchorage on an improved black top road which is wide enough for an airplane to land on in an emergency.

Anchorage

Anchorage was built by the government in 1923 and is the "New York" of the North. It is the largest city in the territory and a transportation center for land, sea, and air travel. Fishing, farming, mining and fur marketing are all important to the economy of this thriving city. Fort Richardson is our most important northern defense. The local airfield is probably the busiest in Alaska and serves the Orient as well as Alaska and the States.

FLYING DOWN TO SEWARD

At the present time there is no highway between Anchorage and Seward, altho a road is under construction. We decided to ship the bus by the Alaska Railroad and fly down to Seward, rather than wait until the regular passenger train went down, two days later. After making the necessary arrangements, we climbed into a plane of one of the veteran "bush pilots of Alaska." About 5 minutes out of Anchorage, the pilot pointed down to where a big black bear was climbing the mountain side. Later we saw 3 bears and 2 moose on the return trip. With the exception of 2 or 3 air pockets between the mountains, the flight was uneventful until we made the approach for landing at Seward. We bounced several times, due to the air currents, and then settled to the ground. As our plane was taxied up in front of the hangar, the left tire blew out. We climbed out and as I looked at the side of the plane, it was reassuring to know that we had been flying in a "Safeway Airline" plane!

VACATIONLAND SUPREME

Starting point for any vacation on the Kenai Peninsula is the city of Seward, named for the great Secretary of State who arranged for the purchase of Alaska by the United States for $7,200,000. Seward is deservedly the "most beautiful town in Alaska." It is built at the head of picturesque Resurrection Bay where Alexander Baranoff landed in 1792. It was from here that we visited the hunting, fishing and scenic paradise of Kenai. A few miles from Seward lies 20-mile long Kenai Lake. Along its shores you will find hiking, boating, swimming, horseback riding, trout, moose, bear and sheep. Here too, we visited "Alaska Nellie" at Lawing, Alaska. Her museum is one of Alaska's best. This 76 year-"young" pioneer will proudly show you the many animals she has killed and tell you interesting experiences of her 50 years in Alaska.

Cooper's Landing at the end of Kenai Lake is the center of big game hunting. Then, at Russian River Rendezvous, a lodge operated by a retired school teacher, we saw salmon fighting their way up Russian River to their spawning grounds.

IT'S A SMALL WORLD

A few days later we drove over the Seward-Kenai Highway to the little fishing village of Kenai. During our visit to the Kenai

Territorial School, we learned that the superintendent and his wife had returned from summer school at Indiana State Teacher's College, Terre Haute, Indiana, the day before our visit.

At Naptown, Alaska, on the Seward-Kenai Highway, we stopped for coffee at a little lunch room and found an arrow pointing back toward Seward. The sign "Indianapolis—4,550 Miles" told more than George and Alex Petrovich and their wives would admit. Inside the lunch room, I was surprised again—to find a picture of their relative and my friend, Howard Longshore, an Arsenal Technical High School teacher of Indianapolis. This is truly ONE World, and a small world at that!

Time For School

Winding back to Seward thru miles of the most majestic mountain scenery and some of the best hunting and fishing country on the continent made me realize that Alaska will have her magnificent beauty long after all her gold is gone. Once you know Alaska and her wonderful people you look forward to going back.

Alaska had been so wonderful that it was difficult to realize that our plane reservations were for tomorrow, August 23. It was time to leave the towering mountains surrounding beautiful Resurrection Bay.

We flew up to Anchorage in our "Safeway Airline" plane. Leaving Anchorage in a Northwest Airlines, 55 passenger DC-4 at 11:15 A.M., we arrived in Seattle at 6:35 P.M., Alaskan Time.

An uneventful trip by plane and train brought us to Shelby, Montana, where we loaded our baggage into my car and started for Indianapolis, arriving on August 27.

Ten thousand one hundred and eighty-six miles of travel in twenty-seven days is not recommended—so let's take the entire summer next year!

GEOGRAPHY OF MANUFACTURING: WHAT IS IT?[1]

JOHN W. ALEXANDER
University of Wisconsin

"What is the connection between manufacturing and geography?" is a question which laymen frequently ask of geographers who are teaching or doing research in manufacturing. To members of the geographic profession this may seem like a useless question because to them the connection is perfectly clear. However, it is by no means clear to other people among whom there is a widely-held notion that geography deals only with landforms, climate, resources, and locations of cities and rivers. Consequently, little connection is seen between manufacturing and geography. There is ample evidence of this attitude at registration time on a university campus when numerous students, thinking of registering for "Geography of Manufacturing" seem puzzled and ask, "Just what do you do in a geography of manufacturing course?"[2] The same sort of question is encountered in field work when one interviews men in industry. They are inquisitive as to the reasons for the geographer's interest in their occupation, and they frequently ask, "So you are a geographer! What has geography got to do with manufacturing?" They understand why an economist or a representative of a school of commerce should be interested in manufacturing, but why should a geographer? What is the answer? Should a course on manufacturing be offered only in commerce schools and in departments of economics? Is geography overreaching its bounds, or should it be made clear to all that certain aspects of manufacturing occupy a logical position in geography?

Geography is the study of the regions of the earth's surface. Regions exist because "things" differ from place to place, and these things are of two types—"physical" and "cultural." Across the face of the earth these two types of elements are interwoven something like the warp and woof of a fabric—the physical strands

[1] The author gratefully acknowledges the contributions of Richard Hartshorne, Professor of Geography, University of Wisconsin and Clarence Olmstead, Assistant Professor of Geography, University of Wisconsin, in the formulation of many ideas contained in this article.

[2] The author has been confronted with this question countless times by students (from disciplines outside geography) who are interested in three credits in an elective course and happen to notice "Geography of Manufacturing" as they thumb through the timetable.

including climate, landforms, soils, vegetation, minerals, etc.; while the cultural strands include population, settlements, agriculture, mining, manufacturing,[3] etc. (Fig. 1). If one of these elements were distributed evenly over the earth in monotonous uniformity it would have no geographic aspect, but since there are regional differentiations for each, they are geographical elements. Since manufacturing does differ from place to place, it can be analyzed geographically and thus it qualifies as one of those elements which cause regions to be distinguishable on the earth.

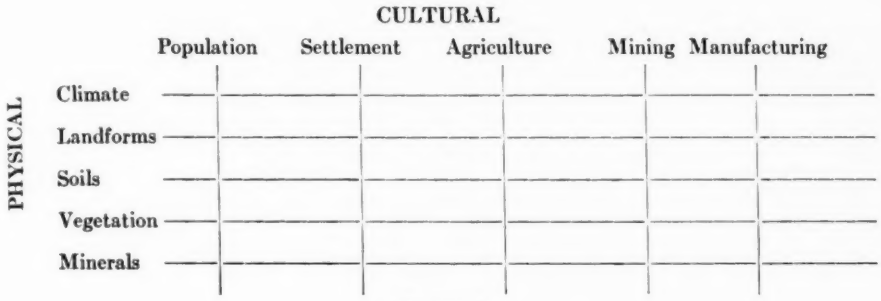

Figure 1

In his consideration of the fabric of the earth's surface, the geographer can make his study in one of two ways. One way is to consider different sections of the fabric separately—the regional approach—in which *all* the strands are studied in their interrelationships in *one* region. A second way is to pull out *one* strand from the entire fabric and analyze it as it appears in *all* areas. Thus we have the several "systematic" branches of our discipline; physiographers extract the landform fiber, climatographers the climate strand, and others do likewise with other physical elements such as soils, vegetation, and minerals. Such a systematic approach to the cultural elements has not been so well-ordered because most of the extraction has been in handfuls of strands on the part of economic geographers who have spread their attention over the entire woof.

Analysis of Manufacturing

Since manufacturing is one of the cultural fibers which helps determine the character of a region it can be extracted for indi-

[3] To be sure, the analogy is not entirely appropriate because the woof is in part dependent on the warp of the geographical elements, nevertheless there is this close interconnection between the two distinctly different types of elements.

vidual analysis. How will a geographer handle it after he has extracted it? Is the strand which he pulls out of the fabric any different from the strand which an industrial historian extracts or the strand which an industrial economist holds up for inspection? The strand is one and the same for all three. The difference is in three different aspects of the fiber being studied. The geographer is interested in how that strand differs from place to place. The historian is concerned with how it varies from time to time. The economist or any other type of manufacturing specialist directs his attention mainly to the nature of the strand itself—to characteristics and the status of manufacturing in a particular time at a particular place.[4] Perhaps a simple diagram may clarify this idea (Fig. 2). The horizontal dimension represents differences in TIME; the horizontal dimension from front to rear represents differences in PLACE; the vertical dimension represents differences and characteristics existing at a definite time in a definite place. The block represents a body of knowledge about manufacturing.

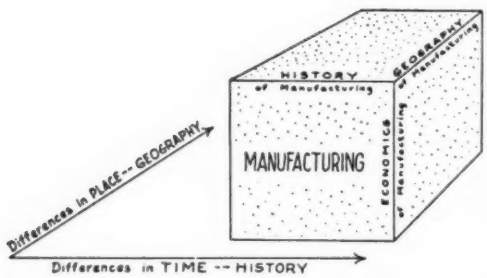

Fig. 2. Adapted from a comparable diagram on page 147 of Richard Hartshorne's "Nature of Geography."

The historian is interested in that body of knowledge mainly in the left-to-right dimension; the geographer is interested in the same body of knowledge but primarily in the front-to-rear dimension; the economist and industrial specialist are interested in it in the vertical dimension. All three are concerned with the same body of knowledge, but each focuses on facts which represent a different aspect of that knowledge.

Here then is the connection between geography and manufacturing. Just as there is a history of manufacturing in which one studies the differences in manufacturing from time to time, just so, there is need to examine the geography of manufacturing in which one studies its differences from place to place. Therefore, "Geography of Manufacturing" is a legitimate segment of a geography

[4] The economist frequently considers temporal changes (in which case he is utilizing history), or spatial changes (in which case he is employing a geographic viewpoint).

curriculum, and it focuses attention on regional differentiation in terms of manufacturing.

The Geographical Approach

The major questions which attract a geographer in the realm of manufacturing are:

1. Where is the manufacturing? In each region or city, what manufacturing is there?
2. How is manufacturing related to the other geographical elements on which it depends—in both its own region and in other regions? This question is handled most satisfactorily in terms of single industries. For example, the iron and steel industry has a certain pattern of distribution and structure involving the location of iron ore mines, coal mines, limestone quarries, water bodies (for cooling purposes), waterways, ships, railroads, blast furnaces, steel and rolling mills, and markets. This "anatomy and physiology" of the steel industry should be described and analyzed in a geography of manufacturing course. In the discussion of such a question, information will be brought to light for understanding why the industry is located where it is.
3. What is the relation of manufacturing to the total geography of the region in which it is located? In other words, what is the industry like and what significance does it have in its region?

These questions can be approached from the standpoint of individual industries, analyzing the distributional pattern of one industry at a time, or from the regional standpoint in which one region at a time is considered in terms of all its industries. It is toward an understanding of the regions of manufacturing that a Geography of Manufacturing Course is directed.

The false concept that manufacturing is foreign to geography can be corrected only as students in geography courses (in grade school, high school, and college) realize that regional differences can be expressed in terms of cultural elements as well as physical elements and that manufacturing is one of the important cultural elements.

A LIST OF ARTICLES ON MAPS AND THEIR USE IN GEOGRAPHIC EDUCATION

Published in the JOURNAL OF GEOGRAPHY, 1922-1949

Prepared for the National Council of Geography Teachers by Margaret Chew, George Corfield, and Katheryne T. Whittemore (Chairman), members of the Committee on Lists and Bibliographies on Maps and Their Use in Geographic Education.[1]

FOREWORD

This annotated bibliography was prepared for the National Council of Geography Teachers as part of the work of the Council's Committee on Lists and Bibliographies on Maps and Their Use in Geographic Education. It makes more easily available valuable articles published in the JOURNAL OF GEOGRAPHY over a period of 28 years and is therefore a suitable first step toward a major objective of the committee, that of increasing the usefulness of material already published on this phase of geographic education.

Classroom teachers in elementary and secondary schools and in colleges will find stimulating ideas and practical suggestions in many of the accounts of teaching done by others. It is hoped that teachers will read about the use of maps at other levels than those at which they teach, because ideas may often be adapted to other situations. For example, the two articles on using maps in testing geographic information, both written by college teachers and relating to college instruction, contain ideas that may be used successfully with secondary school students, and with careful adaptation, with elementary school children.

The large number of articles, 102, indicates the interest of contributors and of the editors of the JOURNAL OF GEOGRAPHY in the use of maps in teaching. The articles cover many phases of the subject but a survey reveals two outstanding themes: the tremendous importance of maps; and the need for carefully guided experiences to develop map reading habits and skills. In addition, the survey reveals topics that have been omitted or that are inadequately treated. A worthwhile consequence may be the stimulation of further study, thought, and experiment in this highly important phase of education.

[1] References to articles published in the JOURNAL OF GEOGRAPHY before 1922 may be found by consulting the *Index to the* JOURNAL OF GEOGRAPHY, *1897 to 1921*.

Maps: Types and Characteristics

Burnham, Guy H. *Map Projections as a Basis for Maps.* 33:142-147, April 1934.

Description of common types of projections.

Blanchard, W. O. *An Energy Map of the United States.* 22:274-278, October 1923.

Suggests converting production figures for petroleum, coal, etc. into horse-power years—for comparison. Shows map of U.S. done on that basis.

Brown, Ralph H. *A Map Sequence of the Belle Fourche Irrigation Project.* 34:109-119, March 1935.

Study of an irrigated area in South Dakota. The geography of the past reconstructed in series of maps.

Gibson, J. Sullivan. *Temperature and Precipitation Map of the United States.* 33:237-240, September 1934.

Presents a map of the United States showing climate by superimposed graphs.

Gustavson, C. G. *Historical Maps and Seapower.* 45:317-321, November 1946.

Points out that maps contribute to distorted conceptions of international relations. Suggests coloring maps to show area dominated by a country at a certain time.

Jefferson, Mark. *An Adventure in Cartography.* 30:201-204, May 1931.

Discusses need of world maps with larger continents of better shape. Recommends six continents on the same scale arranged together on a page.

Raisz, Erwin. *Landform, Landscape, Land-Use, and Land-Type Maps.* 45:85-90, March 1946.

Describes landform, landscape, and land-use maps. Discusses need for a land-type map that would combine information from all three.

Ridgley, Douglas C. *A Lesson with World Maps.* 34:377-379, December 1935.

Recommends that world maps be used and interpreted in relation to the globe. Gives brief description of some world maps. Emphasizes the fact that maps represent real portions of a real earth.

Ristow, Walter W. *Maps: How to Make Them and Read Them.* A Bibliography of General and Specialized Works on Cartography. 42:258-265, October 1943.

Enlarged and reprinted from a New York Public Library bulletin. Includes only studies published since 1939 except for a few outstanding reference books published earlier.

Sites, D. E. *Some Problems of Map Publishers Related to World War II.* 44:145-151, April 1945.

Discusses problems of materials, choice of projection, amount of detail, choice of unit to show distance, frequency of revision.

Spittal, Hugh E. *An Analytical Key to Map Projections.* 48:362-366, December 1949.

A key to help the casual users of projections in the identification of the most commonly used projections.

SELECTION OF MAPS FOR CLASS USE

Abrams, Alfred W. *Visual Instruction in Teaching Geography.* 30: 145-150, April 1931.

Good and bad points of textbook and wall maps in common use. Recommends use of physical-political maps, map slides, greater use of globes.

Jefferson, Mark. *The Maps in School Geographies.* 21:23-28, January 1922.

Gives author's idea of what maps in school geographies should be like. Critical comments on maps in four elementary geographies in use in 1921.

Martin, Neil F. *Equipping a High School Geography Room.* 38: 226-232, September 1939.

Maps, atlases and globes are discussed in one part of this article. Brief mention of ways of showing maps.

Nolen, Luella C. *Check Lists for Use by Teacher and Pupil in Evaluation of Geographic Tools.* 38:205-208, May 1939.

Includes a list of thirteen criteria for teachers to use in evaluating a basic wall map. Also items for pupils to check the maps they make themselves.

Renner, George T. *Educational Revision of Wall Maps.* 40:13-19, January 1941.

The faults of wall maps. Recommends that maps be made quickly and cheaply and designed by cartographers, psychologists and subject matter specialists working together.

SOURCES OF MAPS FOR CLASS USE

Gluck, Harold. *Maps Practically for the Asking.* 39:30-36, January 1940.

Sources from which teachers can collect maps for class use. Descriptions for making outline map on blackboard, mimeographed maps, home-made tracing table. Care of a map collection.

Hartley, W. H. *Illustrative Material for Conservation Education.* 42:33-37, March 1943.

A list of map sources includes blackboard maps, economic maps, et cetera. Gives some state departments and agencies that distribute maps.

Raisz, Erwin. *Cartography in 1946.* 45:347-351, December 1946.

Tells of maps produced during the year by various agencies. Commercial companies not included.

Raisz, Erwin. *Draw Your Own Blackboard Maps!* 41:262-264, October 1942.

Suggests using grid as base for drawing generalized outline of continent on blackboard.

Renner, George T. *Blackboard Wall Maps.* 34:369-374, December 1935.

Discusses problem of securing wall maps when little money is available. Suggests that teachers draw conventionalized outlines to use as base maps. Contrasts standards applied to wall maps by cartographers and teachers.

Ristow, Walter W. *Air Age Geography: A Critical Appraisal and Bibliography.* 43:331-343, December 1944.

Atlases and maps of use in air age geography are listed in sections three and four of this article.

Development of Map Skills

Anderzhon, Mamie L. *What is in the Mile Behind an Inch on a Map or Globe.* 44:288-295, October 1945.

Suggests experiences that help pupils see how many times the scale of the landscape has been reduced to show the pattern or idea expressed by the map, globe or model.

Baker, Emily V. *Diagnosing Children's Ability to Use Maps.* 37: 227-231, September 1938.

Gives a diagnostic test for sixth grade based on maps available in textbooks. Suggestive for teachers who wish to make their own tests to discover pupils' weaknesses in reading maps.

Day, Pauline. *Making Geographic Symbols for Rivers Signify Reality.* 42:145-148, April 1943.

Description of lessons designed to make symbols for rivers more real. Emphasis on the river basin rather than the river.

Dudley, Elizabeth. *An Approach to Map Study.* 36:354-356, December 1937.

Tells how third grade made a map on the floor after seeing a map of their city.

Made additions and corrections as they learned about their community. Development of concepts of scale, direction and symbols.

Forsyth, Elaine. *Map Reading.* Series: 42:249-257, October 1943; 42:287-297, November 1943; 42: 327-332, December 1943; 43: 13-17, January 1944; 43:71-75, February 1944; 43:92-96, March 1944; 43:140-144, April 1944; 43:168-174, May 1944.[2]

A series of lessons for junior high school students. Includes instruction in the use of latitude and longitude, great circles, scale, map projections. Gives a test of map-reading skills.

Fuller, Kenneth A. *Developing Map Reading Skills for Global Emphasis.* 42:216-220, September 1943.

Lists the skills basic to the reading of polar-centered maps. Suggestions for introducing them to pupils. Advantages and disadvantages of polar projections. Map study questions based on a north polar map.

Fuller, Kenneth A. *War Maps: Materials for Improving Map Reading Skills in the Junior High School.* 41:296-302, November 1942.

Suggests use of war maps in magazines and newspapers to improve map reading and interpretation. Gives skills needed to use such maps. Standards for evaluating the usefulness of newspaper maps. Diagnostic quiz based on a newspaper map.

Gregoria, Sister Mary. *A Course in Map Study.* 42:346-349, December 1943.

Outline of content for a one or two hour course for high school and college students with no geography since grades. Suggests some exercises.

Hahn, H. H. *Why Failures in the Study of Geography?* 35:225-234, September 1936.

Analysis of 283,000 answers in preliminary tests for construction of Hahn-Lackey geography scale, plus hundreds of answers since. Emphasizes the need for developing meaning before the introduction of a map symbol and for careful instruction in reading maps.

James, P. E. *Developments in the Field of Geography and Their Implications for the Geography Curriculum.* 46:221-226, September 1947.

Importance of map reading as basic to the understanding of all geographic concepts. Urges that map reading skills be taught step by step. Emphasizes the need for constant use of maps.

[2] The articles by Forsyth have been published as one of the Geographic Education Series: *Map Reading* by Elaine Forsyth, McKnight and McKnight, Bloomington, Illinois.

Lloyd, Trevor. *Practical Geography in the High School.* 42:61-68, February 1943.

Describes making a map from an air-view of a place known to pupils as an approach to understanding that map symbols represent realities. Describes exercises that develop knowledge of scale and of contour maps.

Mitchell, Mary Alice. *How and When Does 'Activity' Contribute to a Social Education?* 46:352-357, December 1947.

Urges the selection of activities that will lead to social understanding. Describes map making carried on when eight-year olds studied their community.

Moyer, Josephine and Taylor, Frances E. *Introduction of the Map to Fourth Grade Children.* 34:249-252, September 1935.

Urges introduction of child to map symbols thru a study of realities which symbols represent. Describes a lesson when physical features were discovered in a garden before introduction of a relief map.

Phillips, Mary Viola. *Geography in the New Kensington High School.* 44:216-221, September 1945.

Tells of the deficiencies in map reading skills shown by high school students and the need for training in map reading.

Ridgley, Douglas C. *Some Special Topics in Geography Which Need Special Consideration by the Teacher.* 29:265-269, September 1930.

Among the special topics discussed is that of map reading. Children should learn to use maps without aid of questions by author of textbook or teacher.

Ridgley, Douglas C. *Teaching of Directions in Space and on Maps.* 21:66-72, February 1922.

Describes use of sun, shadows, and stars for determining direction; reading of direction from a map; meridians and parallels as direction lines.

Shyrock, Clara M. *Gradations in Map Learning.* 38:181-187, May 1939.

Gives in considerable detail the grade placement of skills in map reading.

Shyrock, Clara. *Maps and Mapping in the Grades.* 22:265-274, October 1923.

Describes gradual steps for the development of map skills in the elementary school.

Sorenson, Frank E. *The Influence of Specific Instruction on Map Interpretation.* 35:300-307, November 1936.

An account of a study made to discover the influence of specific map instruction in developing interpretative ideas of major geographic understandings.

Staple, Flora M. *A Method of Teaching Daily Time Adjustment to Earth Rotation.* 38:239-244, September 1939.

The concept of meridian was taught from the shadows made by a line of children at noon. The understanding thus developed was then used in map reading.

Svec, M. Melvina. *The Use of USGS Maps at High School Level.* 43:343-350, December 1944.

Ways of teaching junior high school children to read USGS contour maps.

Vegter, Dorothy O. *Introducing Geography to Fourth Graders.* 45: 114-118, March 1946.

Included within a general discussion is a description of beginning map work.

Witham, Ernest C. *A Method of Teaching Large Geographical Areas.* 27:180-189, May 1928.

Discusses difficulty of getting correct ideas of area from maps. Compares scales used in the maps in certain texts. Suggests exercises to help children to get accurate ideas.

TESTS FOR DIAGNOSING ABILITY TO USE MAPS

Howe, George F. *A Study of Children's Knowledge of Directions.* 30:298-304, October 1931.

Describes an experiment to discover what knowledge elementary school children have of directions in space and on a map. Also investigates their reasons for thinking they know certain directions. Procedure given and results analyzed.

Jessop, Grace F. *A Map for Diagnostic Purposes.* 37:112-115, March 1938.

Describes a diagnostic test used in a seventh grade at the beginning of the year. Objective test based on a hypothetical map.

McDavitt, Neva. *Map Pre-Tests: Devices to Discover the Ability of Pupils to Interpret Maps.* 44:207-209, May 1945.

Describes a pre-test for high school and freshman college classes based on physical-political maps of U. S. Also describes use of maps in certain types of problems.

Miller, George J. *Testing Map Reading Ability.* 30:38-42, January 1931.

Report by Editor of the Journal of a testing program in New York City Schools. Test given to eighth grade children based on maps in textbooks.

Schwendeman, J. R. *Some Experiences in Teaching Sixteen Hundred Cadets of the United States Army Air Force.* 44:152-161, April 1945.

Gives a diagnostic test on map interpretation and exercises used in laboratory work.

Using Maps in Geographic Study

Anderzhon, Mamie L. *Writing Our Own Map Language.* 45:35-38, January, 1946.

Junior high school level. Describes map activities used in studying various phases of geography. Recommends the development of overlays to aid study of one factor in relation to other factors.

Aurousseau, M. *The Method of Orientation in Teaching Geography.* 21:140-146, April 1922.

Suggestions for the use of the globe to gain horizontal and vertical orientation. Secondary school level.

Berst, Leada Newman. *Interest-Stimulating Devices: An Electrical Map.* 28:307, October 1929.

How an electrical map was made and used for drill in the location of cities.

Birch, T. W. *Mapping the Monsoons.* 41:32-34, January 1942.

Description of a novel arrangement of a notebook map.

Blouch, Adelaide. *City Study in the Upper Elementary Grades.* 47:306-311, November 1948.

Description of a unit on the home area that included map work of various kinds. Diagram of city colored to show business section, industrial areas, etc. Route of excursion marked on map. Map activities in connection with other cities.

Bozarth, Ruth O. *Map Making in the Snow.* 39:325-326, November 1940.

Brief description of making a relief map in snow.

Burgess, Alvin V. *The Use of Maps in Developing Geographic Personalities.* 40:57-64, February 1941.

Description of a study of Australia based on maps. Raised problem of the distribution of population from map study. Other maps used in solution of the problem.

Caldwell, Naomi M. *An Atlas of France—A Project in Grade VI.* 21:105-109, March 1922.

Interest in articles from France resulted in the making of a product map. This developed into the making of many maps for an atlas of France.

Chew, Margaret S. *Map Making as a Junior High Elective.* 44:85-90, March 1945.

The organization and content of an elective course in map making. Definite directions for map-making activities, materials and techniques.

Cox, Catherine E. *Teaching Africa by Regional Map-Making.* 39:362-364, December 1940.

Tells how a junior high school class worked out a fairly satisfactory regional division of Africa.

Curnow, Irene J. *Map Study for a School in Long Island, New York.* 27:97-109, March 1928.

Describes lessons based on a topographic quadrangle including preliminary class study of the map and field work. High school level.

Dakin, W. S. *Use of Wall Maps in Teaching Geography.* 30:296-298, October 1931.

Urges class exercises based on wall maps that all can see. Topics suggested include latitude and longitude, scale, sizes of cities, altitudes. Recommends use of map before reading text.

Davis, W. M. *Geographic Orientation.* 21:316-319, November 1922.

Critical comments on article by Aurousseau. Contains practical observations on relation of material on orientation to various levels of learning.

Edwards, J. H. *Teaching the Geography of Australia Through Maps.* 46:318-320, November 1947.

Brief description of a study of Australia based on maps. A major objective was the need of concrete evidence of the ability of a sixth grade to read maps and to apply larger generalizations.

Eisen, Edna E. *Geography Field Work with Junior High School Pupils.* 30:61-73, February 1931.

Account of the organization of a geography club. A major activity was the mapping of land use in the neighborhood of the school.

Frank, R. W. *The Use of the Field Trip in Teaching a Phase of the Steel Industry at the Senior High Level.* 45:322-326, November 1946.

Description of a trip to a steel mill. The concluding exercise was the making of a map showing sources of raw materials, lake ports, railroads, similar industrial communities.

Garland, John H. *The Superior School Giant Globe; An Elementary School Activity Project.* 41:328-331, December 1942.

Describes the method of constructing an 8-foot globe.

Gibson, J. Sullivan. *Geography Laboratory Work in the Teachers College.* 33:309-314, November 1934.

Stresses the importance of training teachers to use maps and globes. Suggestions for use of topographical maps, weather maps, maps on various projections in laboratory work.

Hall, R. B. *Local Inventory and Regional Planning in the School Curriculum.* 33:17-22, January 1934.

Discussion of the value of the study of a small area. Specific directions for the mapping of land utilization. Suggests types of maps that can be made of a local area.

Harris, Ruby M. *Spain.* 38:109-112, March 1939.

A description of a unit that includes map activities. Well stated directions for drawing cross-section across Spain on 40th parallel and for making a pictorial map of Spain. Gives list of statements on Spain to be checked true or false from map in text.

Kusch, Monica Henrietta. *An Experiment in Fifth Grade Field Work.* 35:179-185, May 1936.

Included in a description of field work carried on with a fifth grade in Cleveland is an account of the work done with maps.

Kusch, Monica Henrietta. *Geography: A Laboratory Subject.* 39: 203-206, May 1940.

Tells of work by children with maps showing city pattern, rail net, rainfall, growing season, etc. A junior high school unit.

Mapes, Carl H. *Creative Map Making in Teaching Historico-Geographical Units.* 39:156-160, April 1940.

Testifies to the value of translating verbalism into the language of the map. Students can finish an incomplete map or make a new one from information gained from reading. Gives several illustrations.

Mikesell, Ruth Weaver. *Geographical Activities Involving the Use of Maps and Grafs.* 33:105-113, March 1934.

A study to determine effectiveness of use of maps, pictures and grafs singly or combined, also measurement of achievement obtained thru selected activities. Gives examples of lessons that showed children did not know how to read maps. Discusses the teaching of map symbols and ways in which maps may be used.

Muse, Grace. *Interest-Stimulating Devices: Comparison Map and Graf.* 29:270, September 1930.

A method of comparing sizes of U. S. and Australia by cutting out shapes and mounting on cardboard so that one stands out from the other.

Parker, Edith P. *Geography and the Community.* 40:98-108, March 1941.

Describes the mapping of a village by a fifth grade. Emphasizes the value of such exercises in training children to see thru maps to the realities they represent.

Phillips, Mary Viola. *Unit III. Population for Course in Global Geography.* 45:142-148, April 1946.

A unit outline that includes many map activities in the study assignment sheet.

Repass, F. C. *Experiment in Teaching Current Geography.* 36:321-324, November 1937.

Description of geography lessons to supplement a social studies course. Based on places in the news. One outcome was the increase in skill in using maps.

Ridgley, Douglas C. *A Lesson with the Globe.* 33:279-281, October 1934.

Lists questions and exercises on the globe.

Simpson, Margaret H. *Interest-Stimulating Device: Learning the Map Thru Postmarks.* 43:272, October 1944.

A third grade became interested in postmarks on Christmas cards, and in pasting them on a map learned names of states.

Smith, Lucy M. *Devices to Create Interest in Geography.* 35:194-199, May 1936.

Several definite map activities are described among other devices.

Smith, Villa B. *The Bulk Freight Trade of the Great Lakes.* 45: 257-267, October 1946.

Describes map exercises among the activities in the development of a unit of work at the high school level.

Stamp, L. Dudley. *Land Utilization Survey as a School and College Exercise.* 33:121-130, April 1934.

Describes in considerable detail the way in which the land utilization survey was made by British school children.

Stowell, Margaret. *A High School Class Surveys Its Town.* 41:179-185, May 1942.

Technique of making a land-use map described. Method of organizing and carrying out work given in detail.

Stratton, C. G. *A Fifth Grade Experiment in Mapping.* 21:302-305, November 1922.

A fifth grade class constructed maps of North America by a system of meridians and parallels. Gives samples of maps made. Not contended that this is a proper exercise for fifth grade.

Svec, M. Melvina. *Factors that Influence Climate; Developed by the Use of Deductive Problems.* 45:14-22, January 1946.

Lessons in climate developed largely thru map reading. Secondary school.

Tom, A. O. *Relief Modeling in Elementary Geography.* 39:281-284, October 1940.

Description of how a sixth grade class made a relief model of South America. Evaluation thru comments by children and adults.

White, Helen M. *Diagrammatic Map Making.* 32:242-244, September 1933.

Gives advantage of a diagrammatic representation to emphasize salient features of a map. Illustrates by sketches of the Hudson-Mohawk depression.

Wider, Stella E. *Map Making.* 31:345-347, November 1932.

A method by which children can make outline maps quickly from a prepared pattern. Suggestions for the use of the outline map.

Wilcox, Lillian A. *The Teacher-Made Slide Map and Its Uses.* 27: 198-200, May 1928.

Directions for making slide maps and suggestions for their use in various parts of a lesson.

Wyckoff, Dorothy. *Maps Without Culture: A New Aid in the Teaching of Physiography.* 25:307-309, November 1926.

Tells of experimental printing of some USGS maps without culture. Lists advantages for use in teaching geology.

Zachari, Elizabeth D. *Field Trip Experiences in the Intermediate Grades.* 33:49-60, February 1934.

One section of this article describes the development of a community map during a fifth grade unit "Our City Today".

Using Maps in Testing Geographic Information

Brown, Ralph H. *Testing in Geography at College Level.* 36:140-148, April 1937.

In a general discussion of tests and testing techniques are suggestions for using maps and pictures in testing.

Whittlesey, Derwent. *Current Statistics as Fresh Test Material.* 31:79-83, February 1932.

Reproduces a United States map showing ratio of automobiles to population. This map was given to a class in the regional geography of North America for interpretation as part of final examination.

General and Miscellaneous

Duboc, Jessie L. *Some Questions Teachers Ask Concerning Map Study in the Intermediate Grades.* 32:245-249, September 1933.

Recommends: the use of other maps besides political maps; the study of maps before the reading of the text; the use of a variety of maps of all types; training in the interpretation of facts gained from maps; the need of many experiences to help children understand maps; the delay of the introduction to maps beyond the primary grades; and the correlation of maps and pictures in study.

Hartz, Robert E. *Map Reading by Aviators.* 30:339-341, November 1931.

Describes use of maps by aviators in World War I

Ives, Ronald L. *Viewing Filters Ease Reading of Complicated Maps.* 47:247, September 1948.

Gives brief instruction in the use of various color filters to filter out some colors and to intensify others.

Quam, Louis O. *Use of Maps in Propaganda.* 42:21-32, January 1943.

Points out the false impressions that even scientifically accurate maps may create. Describes characteristics of maps made for propaganda purposes with many examples from German maps.

Ristow, Walter W. *Geographical Information Please!* 38:314-318, November 1939.

Tells of the wide variety of uses made of maps in the map divisions of the New York Public Library.

Saale, Charles W. *Instruction in the Use of Maps Needs to be Increased.* 48:309-316, November 1949.

Discussion of the importance of using maps, some of the ways they may be used, and some problems of training in correct use.

Whittemore, Katheryne Thomas. *The Place of Maps in Social Education.* 47:110, March 1948.

Abstract of chapter appearing in 1948 Yearbook, National Council for the Social Studies.

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This bibliography will appear as Professional Paper No. 10, and copies may be obtained from The Office of the Secretary. Refer to a current issue of the JOURNAL OF GEOGRAPHY for the name and address of the present Secretary. Price, 25¢.

THE NATIONAL COUNCIL AT WORK

The 1950 meeting will be held at the Edgewater Beach Hotel, Chicago, Illinois, on Friday and Saturday, November 24 and 25. The completed program will be announced in the News-Letter which will be sent to the membership of the National Council during October. **Make your reservation for the meeting now;** write the hotel directly.

Among many important items on the program are the following:

1. A panel discussion by the American delegates to the UNESCO international seminar on "The Teaching of Geography as a Means to Developing International Understanding." The panelists, who officially represented the United States at the meeting in Montreal during July and August, are Thomas F. Barton, Indiana University, Zoe A. Thralls, University of Pittsburgh, Marion H. Seibel, School 52, Buffalo, New York, and Sister Mary Ursula Hauk, Johnstown, Pennsylvania.
2. A panel discussion on "Procedures and Findings of a Study Group of Teachers in Geographic Education" conducted by members of the Southwestern Pennsylvania Study Group under the direction of Eugenia M. Baxter of Monongahela, with Mrs. Erna Grassmuck Gilland as consultant.
3. A section on Elementary Geography, including a paper by Professor George T. Renner of Teachers College, Columbia University, on "Learning Readiness in Elementary Geography."
4. A section on High School Geography, including a paper by Professor Ruby M. Junge, School of Education, Michigan State College, on "Geographic Concepts in High Schools."
5. Papers on teaching aids of various sorts. Among these papers there will be one on "The Use of Radio as a Teaching Aid in Geography" presented by Professor Harry J. Vander III of the Texas State University for Negroes. It is also probable that the recently completed movies on community resources will be presented by specialists of the United States Office of Education.
6. Papers of direct implication for in-service training of teachers, such as "Potential Uses of Government Libraries," to be presented by Arch C. Gerlach, Chief of the Maps Division of the United States Library of Congress.
7. "A Survey of College Geography" by Joseph R. Schwendeman of the University of Kentucky.
8. A joint session with the Central Association of Science and Mathematics Teachers on *Mathematical Geography;* this section will also include a paper by Otis W. Freeman, Eastern Washington College of Education, Cheney, and formerly Specialist in Geography for Higher Education in the U. S. Office of Education, on "Geography Among the Sciences."
9. A joint session with the Central Association of Science and Mathematics Teachers on *Conservation.*
10. A banquet Friday evening, November 24. The speaker will be George T. H. Kimble, the new Director of the American Geographical Society of New York, and, until last June 30, the Chairman of the Department of Geography at McGill University, Montreal.
11. A joint mixer with the members of the Central Association of Science and Mathematics Teachers immediately following the banquet.

The Distinguished Service Award, the Richard Elwood Dodge and the Ray Hughes Whitbeck prizes, and other awards will be made at the meetings. In addition the National Council of Geography Teachers will aid in the celebration of the 50th anniversary of the Geography Section of the Central Association of Science and Mathematics Teachers.

NATIONAL COUNCIL FELLOWS

The following members of the National Council of Geography Teachers have completed five or more consecutive years of affiliation, and have been elected FELLOWS.

Essie O. Abeel
Clifford Adams
Asbury Park High School
Vera K. Baxter
Mabel R. Beaver
Ruth Belcher
Ann Berich
Nora L. Bernard
Hugh W. Blanchard
Ruth B. Bodenham
Viola M. Bohn
Stanley Bowmar
Catherine L. Braun
T. Taylor Broun
Guy H. Burnham
Daisy S. Buttgen
J. P. Carey
Vernon Carter
Mary E. Case
Harvey Cornell
Mary Croyle
R. W. Caauwe
Marie Davis
George C. DeLong
Sigismond deR. Diettrich
L. B. Dolan
N. N. Duncan
Lyle R. Fletcher
James H. Glasgow
Lee H. Griffin
Ann C. Grove
Edith C. Hammerlund
Cordelia Harbeson
Agnes E. Hart
E. Lillian Hartvigh
Grace C. Hetu
Holy Name College
Charles W. Jennings
Rayburn W. Johnson
Clarence F. Jones
Lucille Kenny
N. T. Kias
Belle M. Landry
David W. Lantis
Wilma Laux
Jean C. Lawrence
Dorothy Lea
Lizzie Lee
H. C. Lucas
Edward D. Ludwig
Carl H. Mapes
Sister Clement Marie
Howard H. Martin
Maurice E. McGaugh
Mabel L. McGirr
J. S. v. d. Merwe
John W. Morris
C. F. Moses
Josephine Moyer
Florence A. Murphy
Ruth Myren
Pearl Noland
J. Warren Nystrom
Clarence W. Olmstead
Ross N. Pearson
Leland R. Pederson
Sidman P. Poole
George Porter
Iris Prat
Margaret Puff
Henry A. Ragaz
Minnie E. Reberry
Agnes Renner
E. H. Runkwitz
Marvin J. Schroeder
Pauline P. Schwartz
Gladys Schwenk
Sidney Sherman
Felipe Silva
A. Marie Spence
Ruth H. Stanley
Joy Stover
Ethel Tatham
Mazie O. Tyson
Harvey A. Uber
Clarence L. Vinge
Thelma I. Waddle
William R. Walker
Morgan L. Walters
Arthur Wassburg
Alice F. Weaver
Gertrude Whipple
John White
Bert L. Wills
George S. Woodman
Marion I. Wright
Vera Zeip

CONTRIBUTING MEMBERS

The following are new Contributing Members of the National Council of Geography Teachers for 1950.

Edna Arundel
W. W. Atwood, Jr.
Irma A. Buell
Daisy Buttgen
E. C. Chamberlain
Margaret B. Downs
Vernor C. Finch
Cordelia Harbeson
Alfred R. Marsh
Helen Mixter
Mary Jo Read

GEOGRAPHICAL PUBLICATIONS

Ronne, Commander Finn (U.S.N.R.), **Antarctic Conquest,** xx and 299 pages, 6 maps, 51 figures. G. P. Putnam's Sons, New York. 1949.

This frank forthright account of the Ronne Antarctic Research Expedition of 1946-1948 will impress both the polar expert and the general reader by the great amount that was accomplished by so few people with only $50,000 plus the loan of government equipment which in return was systematically tested under polar conditions. Impressive, too, was the careful planning and meticulous precaution taken regarding every detail so that man and machine might withstand the unpredictable Antarctic. Moreover, it was the first time that a woman wintered in the Antarctic, and it is noteworthy that the two of them performed regular expedition tasks.

From the main base on the west side of the Palmer Peninsula 450,000 square miles, extending to the head of the Weddell Sea, were explored by air supported with ground reconnaisance surveys. Great pains were taken in the latter effort to obtain ground control for the aerial photographs which would otherwise have been of little value. The trail and air operations were so coordinated as to supply the former by air while the ground parties provided weather data and were available to aid the airmen should they have been forced down in the field. Ronne devised a "leapfrog" method by which one plane was used to haul gasoline to refuel the survey plane in the field, greatly extending the range of the latter. Much of the success of the flights was due to the excellent forecasting based on meteorological observations at the main base, at the advanced base, and by the field parties. A total of 86 landings were made in the field in support of field parties, to refuel, or to obtain astronomical fixes. In addition to the geographical exploration systematic work was carried on in biology, geology, seismology, solar radiation, cosmic rays, atmospheric refraction, terrestial magnetism, and tides.

A valuable addition to any library, *Antarctic Conquest* will serve as a handbook of the latest methods in polar exploration. It tells a forthright and compelling story of the expedition unvarnished with the heroics which mar so many books on exploration. Because the explanation of the various phases of the scientific program is rather complete as well as simple and clear, this book should prove to be a popular and a valuable item for supplementary reading in high school and college geography courses.

Catholic University of America Kenneth J. Bertrand

Anderzhon, Mamie Louise, **Steps in Map Reading,** Rand McNally and Company, Chicago. Pages, 156. Paper binding. Price $0.69.

Maps are of value only to those who know how to read them. For many people this means merely the ability to find some place on the map. But such a simple skill as this is not map reading. The map has a language all its own and consists of a series of symbols. To read a map, therefore, one must be able to recognize the symbols and by noting their arrangement, use them to interpret geographical problems, as well as, to discover new facts and relationships existing between man and his earth. Map reading is not an end in itself but a means of discovering new truths about the earth. Geographers are not the only people who use maps, but the map and the globe are essential tools of the geographer.

As the author states: *"Steps in Map Reading* is truly a work book." The student develops skills, concepts, and understandings by working directly with maps and globes. The book provides a systematic course in map reading, proceeding from simple, essential yet basic concepts to those that are increasingly complex. No step can be omitted, but each new idea presented is a link in the complete understanding of the map.

The wide scope of skills developed is readily seen by noting the chapter headings:

Finding Directions, Up and Down Directions, Maps Tell Where Places Are, Land, Water and Shore Lines on Maps, Altitude—How High is the Land, North and South of the Equator, Reading Climate on a Map, Maps Tell Us Where People Live, Transportation Routes on Maps, Political Symbols on Maps, Longitude and Time, Map Scales, Globe Distances and Directions.

The method for the development of these skills consists of a series of well worked out map exercises with questions to be answered. Pictures and maps are used with excellent results. Many review lessons are included which combine a number of skills developed.

There is no attempt at grade placement of the exercises, but the workbook can be used effectively at a number of levels of instruction. It can be used in the elementary schools in grades five and six, in the junior high school, in senior high school and certainly it can be useful in the training of elementary teachers in teachers colleges.

The book is well illustrated, containing forty-eight maps and diagrams and twenty-five pictures. It is bound in a substantial paper binding that opens easily for working. Most teachers of geography will find this an excellent book to have as they develop map skills with their students.

State Teachers College Valley City, North Dakota INA CULLOM ROBERTSON

Paul R. Hanna and Clyde F. Kohn, **Cross-Country, Geography for Children.** 160 pp. Scott, Foresman and Company. New York. 1950.

Cross-Country is the fourth grade book in the Social Studies Series: Curriculum Foundation Program. It is written in third grade vocabulary and can be easily read and understood by nine-year-old children.

The full length story *Cross-Country,* which deals with a series of planned geographic experiences, is presented in the following 7 units: Home in Los Angeles, California; Across the Desert; Through the Mountains; Across the Plains; Up from the River; Down to the Ocean; Home in Washington, D.C.

Altho the people in *Cross-Country* are fictional their activities are those of our own age in a setting of real places, regions, and cities. The experiences and activities of the children in the story are presented at the observational and participating levels. Pupils using this book will feel they have lived a series of geographic experiences as they identify themselves with the people in the story.

Unlike other fourth grade geographies, which present selected regions in the world from north to south, *Cross-Country* is a west to east geography of the United States. All of the places in *Cross-Country* are approximately the same latitude. The season is mid-summer. The development of latitude and seasonal variations are deferred in this series until a later book.

There are 142 well selected illustrations, many of which are colored. The illustrations are without captions but are referred to in the textual material.

The 28 semi-pictorial maps are planned especially for the book, and map symbols are introduced on simple maps. At the end of each unit the continuity of the story is interrupted by a brief non-fiction world-orientation section. This section might profitably be supplemented by the use of a simple globe and explanation from the teacher.

The teacher's edition includes a large physical map of the United States which the pupils may place on the floor, and use as they follow the Page Family from west to east across the United States.

Oak Park, Illinois MAMIE L. ANDERZHON